



# Michigan Families Medicaid Project Examining Risk, Outcomes, Expenditures for MSS Recipients in 2001



Grand Rapids  
MEDICAL EDUCATION &  
RESEARCH CENTER  
for Health Professions

MICHIGAN STATE  
UNIVERSITY

# Presentation Overview

- Introductions
- Data Production
- Description of risk factors related to maternal and infant health
- Description of “outcomes” related to Maternal/Infant Support Services
- Expenditures of Maternal/Infant Support Services
- Themes from these data
- Where do we go from here?

# Risk Factors

- Smoking
- Alcohol Use
- Drugs
- Depression
- Birth Interval/Parity
- Race
- Age
- SES
- Educational level
- Marital Status

# About Risk Factors

## Today's Presentation

- “Snapshots” of individual risk factors
- Overview of combined risk factors
- Health Disparities

# Outcomes

- WIC
- Depression
- Adequacy of prenatal care
- Birth weight
- EPSDT
- Lead screening
- Immunizations
- Breastfeeding

# Expenditures

- Enrollment in Managed Care & Fee for Service
- Overall Medicaid expenditures for all mothers
- Overall Medicaid expenditures for MSS/ISS enrollees

# Key Observations

- Not reaching the highest risk women.
- Activities of MSS/ISS not linked to purported outcomes.
- Birth Outcomes of enrolled women are not different than non-enrolled women.

# Data Production

- Live births occurring in 2001
- Mother population was Medicaid enrolled in the month the child was born (52,547)
- Child population was Medicaid enrolled in the month of their birth (51,481)
- The study sample is the linked mother & child population when both are Medicaid enrolled in the birth month (47,300)



# Data Production

- Approximately 728 mothers and newborns were excluded from the study as the Master Record Number (MRN) assigned by Vital Records was linked to more than one Medicaid Beneficiary ID#
- Medicaid enrolled months of study for the mother could not be greater than 270 days prior to the birth
- Medicaid enrolled months of study for the child could not be greater than twelve months after the birth

# Data Sources

- Medicaid
- Vital Records
- WIC
- Lead Screening
- When possible, the multiple sources of data were collated to improve the completeness of the data i.e. smoking data can be found in all three sources.

# Limitations

- Linking of data relies on an algorithm which works in the background to “match” beneficiaries across program areas. This matching, while highly accurate, is not perfect and may result in a limited number of missed matches or false matches.
- WIC data was not loaded into the integrated MDCH Warehouse until the Spring of 2002 resulting in incomplete data for certain variables, i.e., alcohol use, level of education.

# Medicaid Births 2001

n=46617 women gave birth  
to n=47300 babies

n=46672 unique pregnancies  
gave n=47300 babies

# MSS and ISS in 2001

<b>Enrolled in MSS</b>	<b>n</b>	<b>%</b>
Yes	10668	22.9
No	35949	77.1

<b>Enrolled in ISS</b>	<b>n</b>	<b>%</b>
Yes	7783	16.5
No	39517	83.5

<b>Enrolled in Both</b>	<b>n</b>	<b>%</b>
Yes	4267	9.2
No	42350	90.8

# Top 10 Counties by Percentage Enrolled in MSS

Top 10 MSS Enrollment by Percentage Enrolled				
Not Enrolled		County	Enrolled	
n	%		n	%
5	9.62	Mackinac	47	90.38
27	18.75	Charlevoix	117	81.25
9	19.57	Schoolcraft	37	80.43
8	20.00	Luce	32	80.00
26	20.97	Antrim	98	79.03
34	21.94	Emmet	121	78.06
11	22.45	Alger	38	77.55
34	24.82	Otsego	103	75.18
74	30.08	Chippewa	172	69.92

# Top 10 Counties by Percentage Enrolled in ISS

Top 10 ISS Enrollment by Percentage Enrolled				
Not Enrolled		County	Enrolled	
n	%		n	%
13	25.00	Mackinac	39	75.00
17	27.42	Iron	45	72.58
13	32.50	Luce	27	67.50
17	36.96	Schoolcraft	29	63.04
105	42.68	Chippewa	141	57.32
111	44.22	Branch	140	55.78
61	49.19	Antrim	63	50.81
1637	49.86	Kent	1646	50.14
25	51.02	Montmorency	24	48.98
6	54.55	Keweenaw	5	45.45

# Top 10 Counties by Population Enrolled in MSS

Mother's Resident County by MSS Status				
Not Enrolled		County	Enrolled	
n	%		n	%
11964	91.96	Wayne	1046	8.04
2251	68.57	Kent	1032	31.43
2481	87.05	Genesee	369	12.95
1849	88.60	Macomb	238	11.40
771	53.14	Ingham	680	46.86
1118	79.74	Saginaw	284	20.26
781	67.27	Kalamazoo	380	32.73
721	64.78	Muskegon	392	35.22
489	50.52	Berrien	479	49.48
635	72.00	Washtenaw	247	28.00



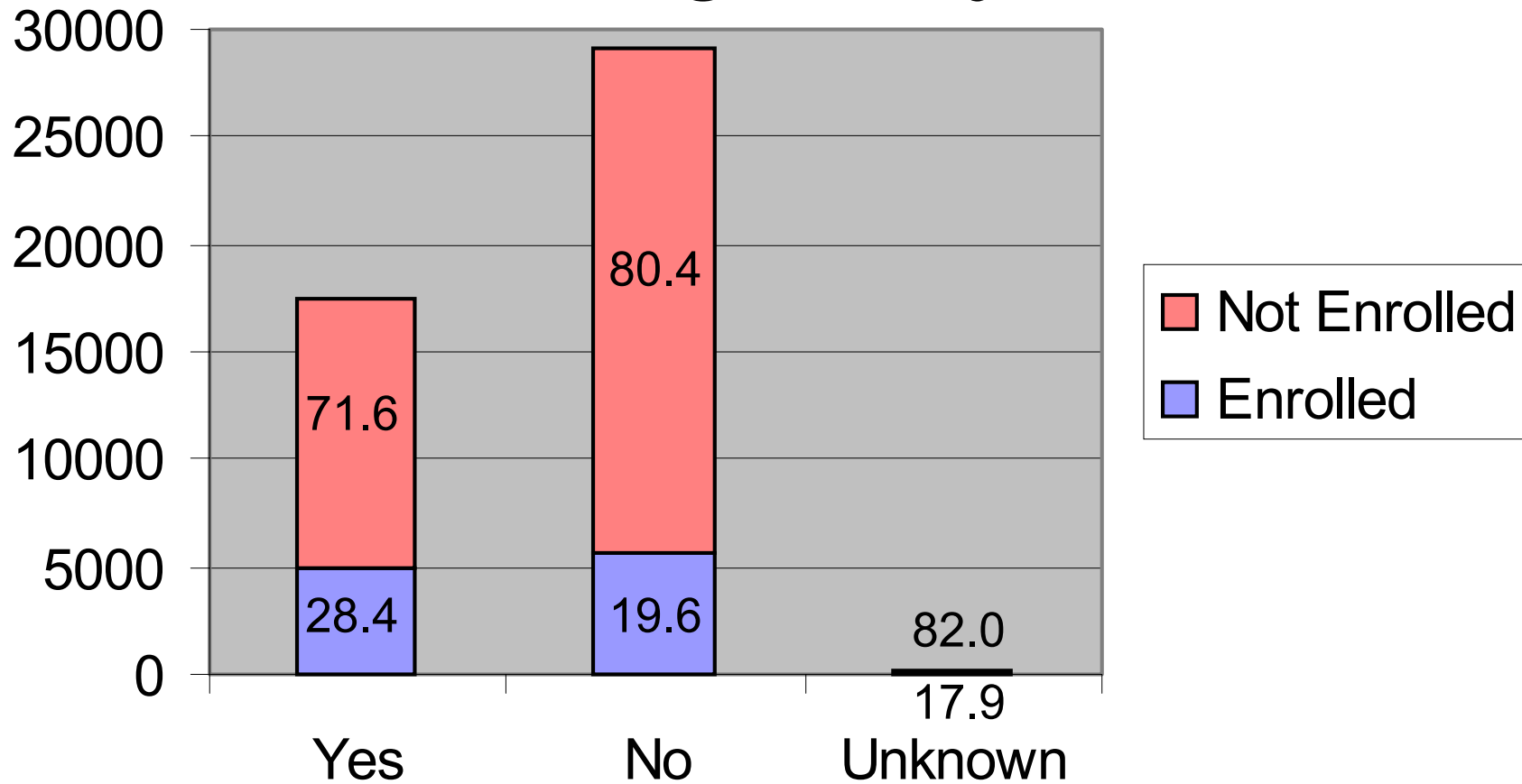
# Top 10 Counties by Population Enrolled in ISS

Mother's Resident County by ISS Status				
Not Enrolled		County	Enrolled	
n	%		n	%
12364	95.03	Wayne	646	4.97
1637	49.86	Kent	1646	50.14
2447	85.86	Genesee	403	14.14
2005	96.07	Macomb	82	3.93
1293	89.11	Ingham	158	10.89
1235	88.09	Saginaw	167	11.91
983	84.67	Kalamazoo	178	15.33
830	74.57	Muskegon	283	25.43
668	69.01	Berrien	300	30.99
712	80.73	Washtenaw	170	19.27

# Medicaid by Smoking During Pregnancy (n=46672)

Smoking	n	%
Yes	14469	31.0
No	32064	68.7
Unknown	139	0.3

# MSS by Smoking During Pregnancy



# MSS Use by Smoking During Pregnancy

	Encounters + Claims n=10688					
	$\leq 3$ n=3414		4-6 n=2999		>6 n=4275	
Smoking	n	%	n	%	n	%
Yes	1486	30%	1386	28%	2070	42%
No	1921	34%	1604	28%	2195	38%
Unknown	7	27%	9	35%	10	38%
Total	3414	32%	2999	28%	4275	40%

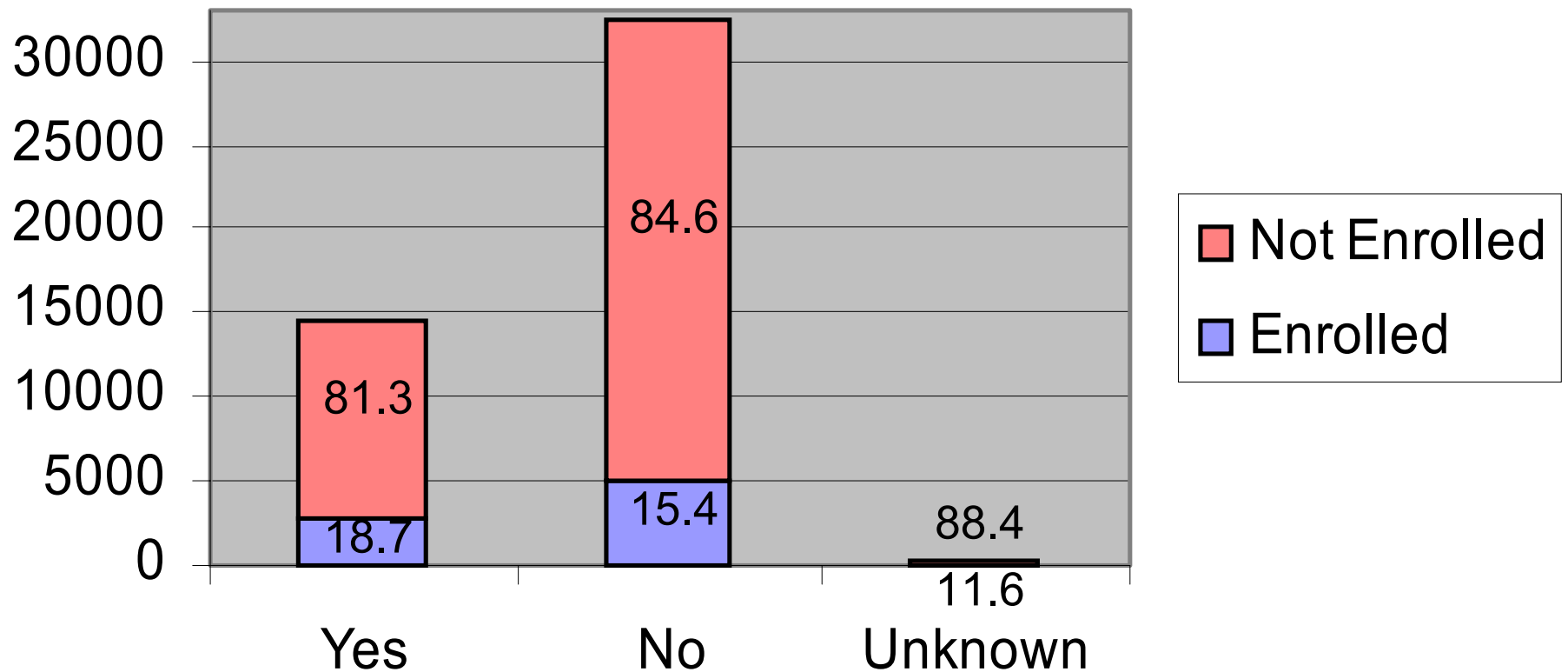
# Top 10 Counties by Percentage of Smoking Women Enrolled in MSS

Top 10 MSS Enrollment by Percentage of Enrolled Women Smoking				
Enrolled & Smoking		County	Not Enrolled & Smoking	
n	%		n	%
10	90.91	Schoolcraft	1	9.09
20	86.96	Alger	3	13.04
40	83.33	Antrim	8	16.67
19	82.61	Mackinac	4	17.39
19	79.17	Benzie	5	20.83
66	74.16	Branch	23	25.84
20	74.07	Iron	7	25.93
35	72.92	Otsego	13	27.08
8	72.73	Luce	3	27.27
37	72.55	Emmet	14	27.45

# Top 10 Counties by Population of Smoking Women Enrolled in MSS

Top 10 MSS Enrollment by Number of Enrolled Women				
Enrolled & Smoking		County	Not Enrolled & Smoking	
n	%		n	%
204	19.81	Wayne	2385	20.27
282	27.78	Kent	412	18.55
116	32.04	Genesee	648	26.55
90	38.46	Macomb	549	30.12
131	19.59	Ingham	132	17.32
72	25.90	Saginaw	272	24.68
133	35.56	Kalamazoo	227	29.33
134	34.91	Muskegon	242	33.94
115	24.78	Berrien	107	22.06
66	26.94	Washtenaw	120	19.14

# ISS by Smoking During Pregnancy



# ISS Use by Smoking During Pregnancy

	Encounters + Claims n=7690					
	$\leq 3$ n=2595		4-6 n=1885		>6 n=3210	
Smoking	n	%	n	%	n	%
Yes	1079	32%	822	25%	1432	43%
No	1510	35%	1059	24%	1771	41%
Unknown	6	35%	4	24%	7	41%
Total	2595	34%	1885	25%	3210	42%



# Top 10 Counties by Percentage of Smoking Women who Enrolled Their Infants in ISS

Top 10 ISS Enrollment by Percentage of Enrolled Women Smoking				
Enrolled & Smoking		County	Not Enrolled & Smoking	
n	%		n	%
19.00	82.61	Mackinac	4.00	17.39
22.00	81.48	Iron	5.00	18.52
8.00	72.73	Luce	3.00	27.27
2.00	66.67	Keweenaw	1.00	33.33
13.00	61.90	Montmorency	8.00	38.10
3.00	60.00	Unknown	2.00	40.00
54.00	59.34	Branch	37.00	40.66
28.00	58.33	Antrim	20.00	41.67
13.00	56.52	Alger	10.00	43.48
6.00	54.55	Schoolcraft	5.00	45.45

# Top 10 Counties by the Population of Smoking Women who Enrolled Their Infants in ISS

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# Depression

- Diagnosis MDCH Expenditure data: 8%
- From the literature
  - Diagnosis: Approximately 20-25%
  - Symptoms: Approximately 50%
  - Associated with: stress, smoking, <12 grade education; substance abuse; DV

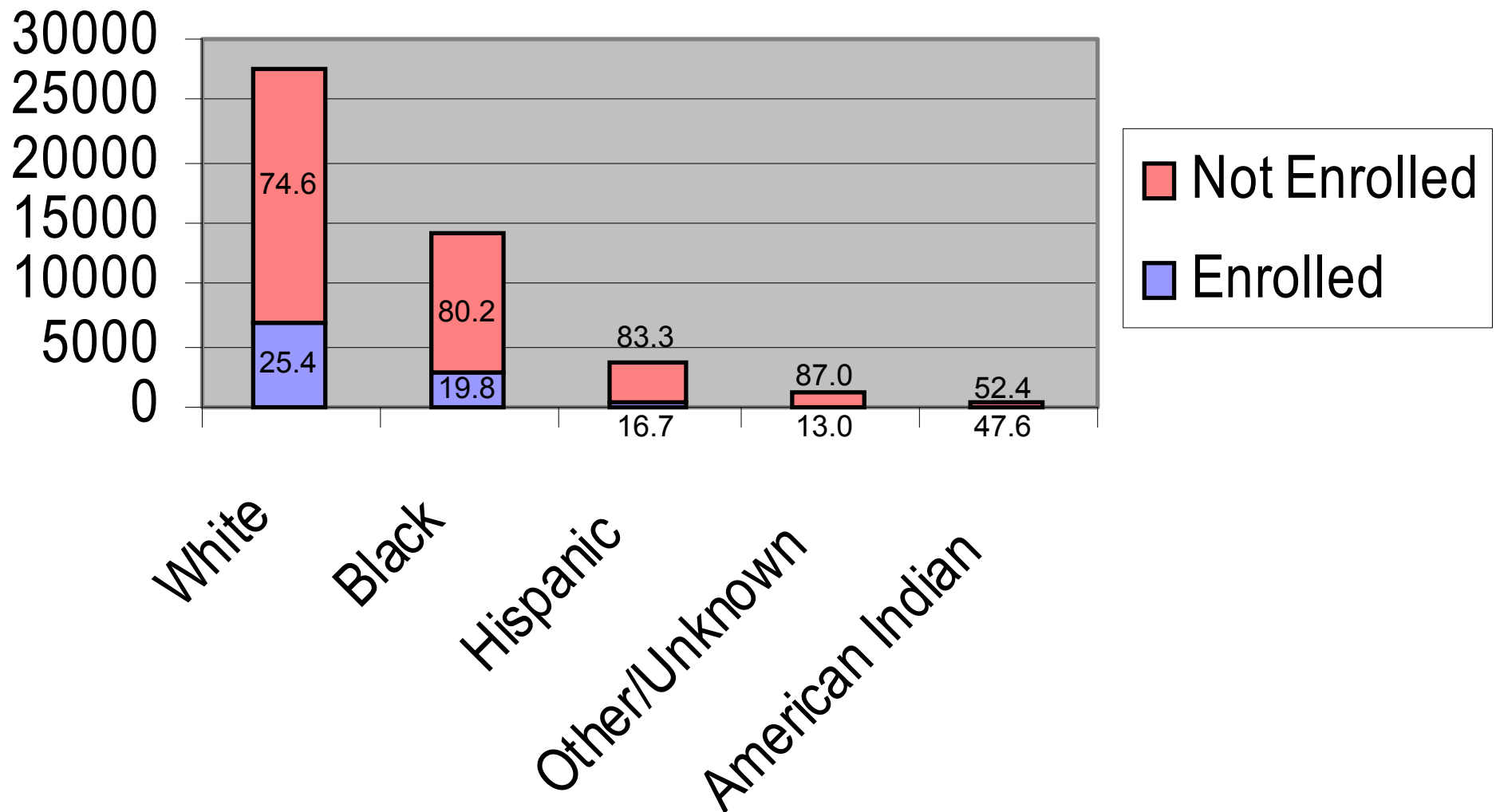
# Characteristics of Depression in 2001 Data

- 72% of smokers were diagnosed with depression
- 18% of alcohol users were diagnosed with depression
- 22% of drug users were diagnosed with depression
- 35% had documentation of both substances

# Characteristics Continued

- Predominantly White
- Age 20-29
- Multiparous
- Less Educated
- Unmarried
- Slightly more likely to be above 100% of poverty

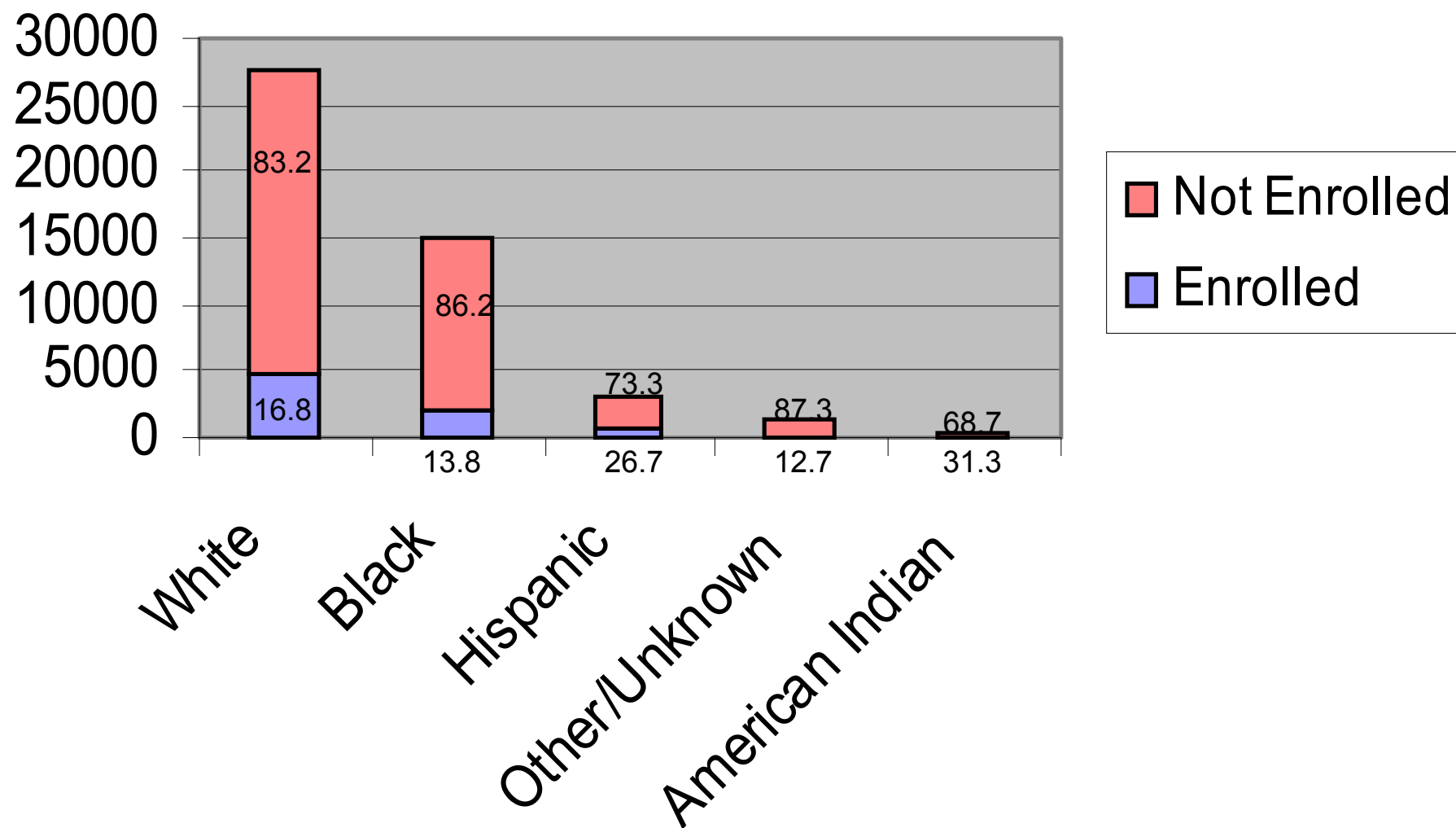
# MSS by Race



# MSS Use by Race

	Encounters + Claims n=10668					
	$\leq 3$ n=3409		4-6 n=2995		>6 n=4264	
Race	n	%	n	%	n	%
White	1949	28	1823	26	3233	46
Black	1149	41	911	33	722	26
Hispanic	207	35	185	31	199	34
Other/ Unknown	58	38	46	30	47	31
American Indian	46	33	30	22	63	45
Total	3403	32	2995	28	4264	40

# ISS by Infants Race

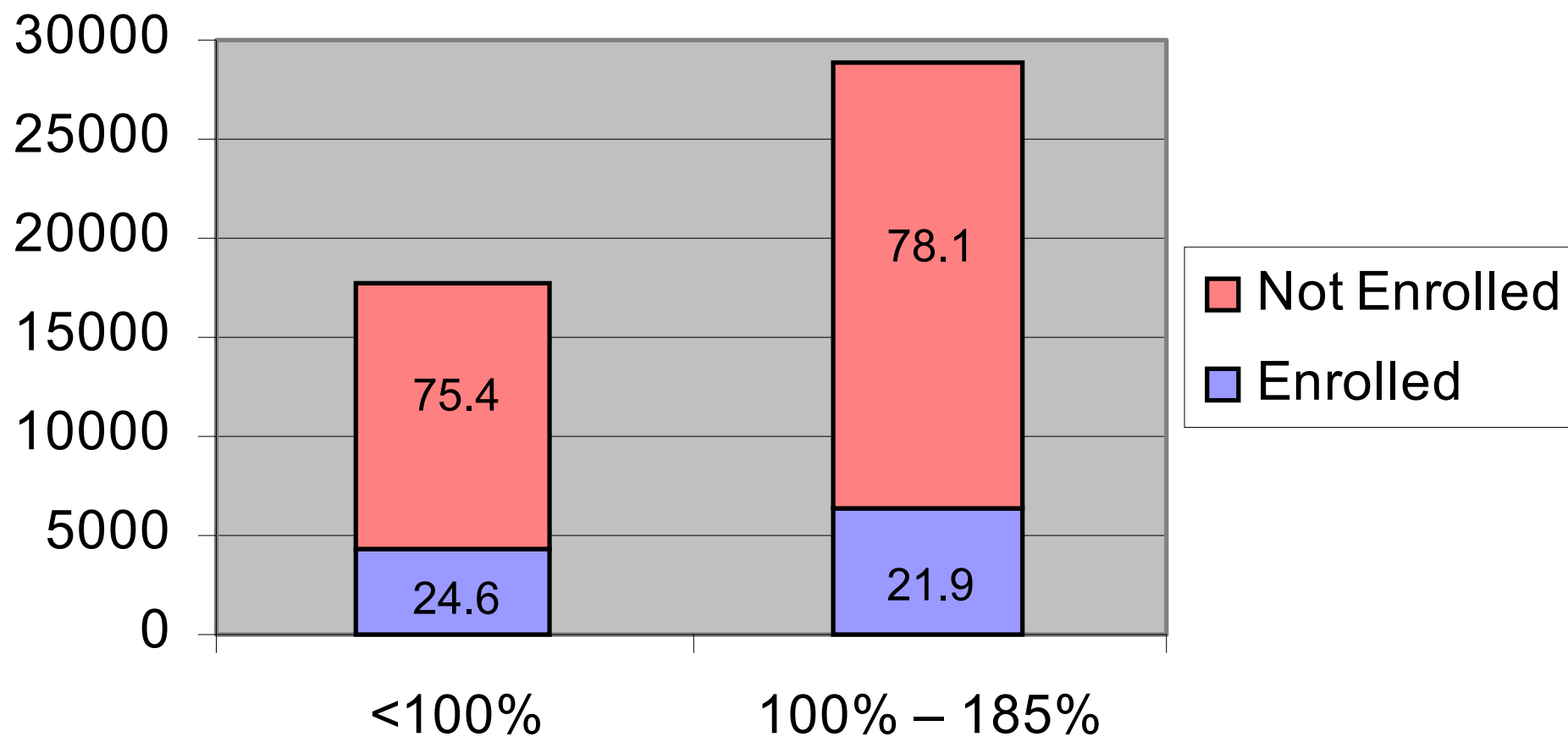




# ISS Use by Infant's Race

	Encounters + Claims n=10668					
	$\leq 3$ n=3409		4-6 n=2995		>6 n=4264	
Race	n	%	n	%	n	%
White	1408	30	1059	23	2176	47
Black	784	41	544	29	566	30
Hispanic	323	35	223	25	364	40
Other/ Unknown	54	12	35	8	353	80
Amer Indian	20	22	23	25	48	53
Total	2589	32	1884	24	3507	44

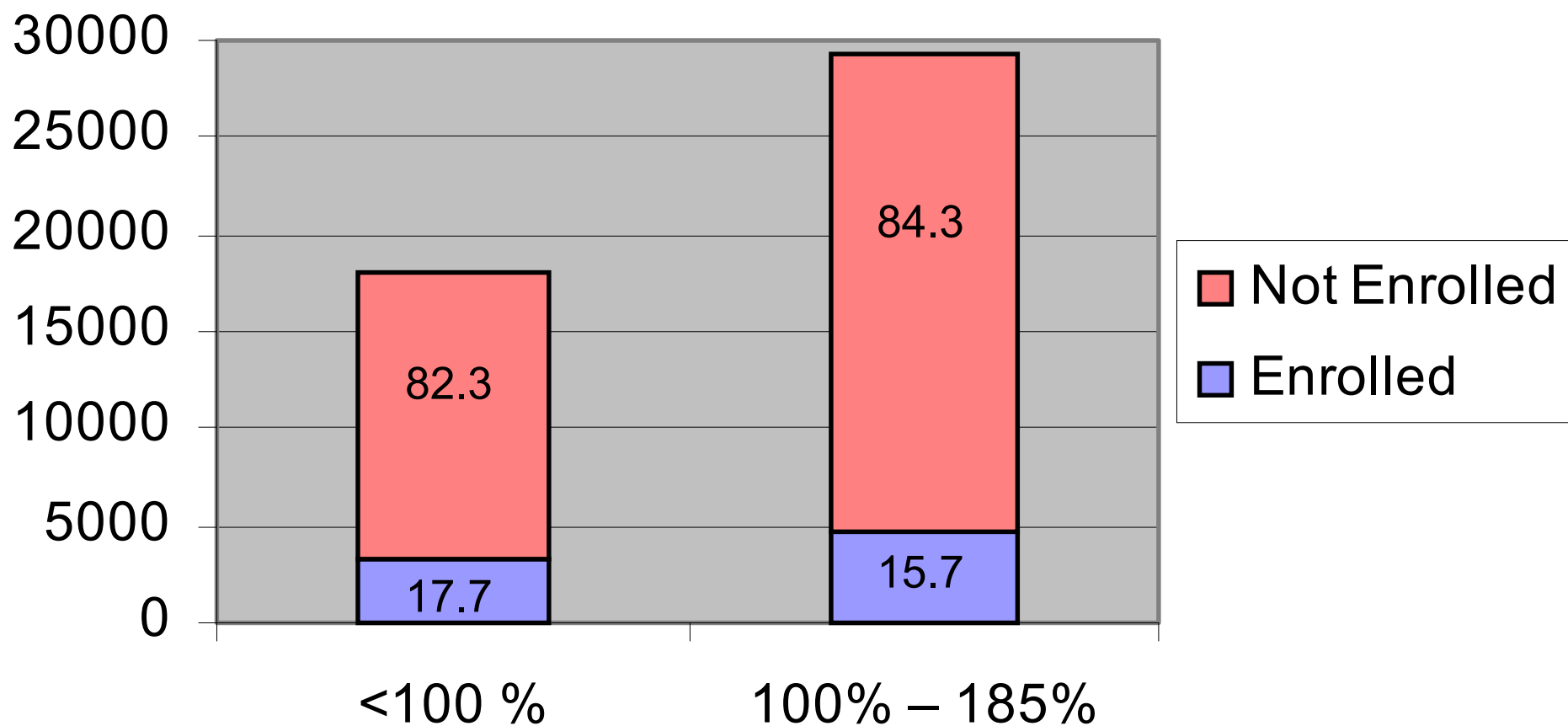
# MSS by SES



# MSS Use by SES

	Encounters + Claims n=10688					
	$\leq 3$ n=3414		4-6 n=2999		>6 n=4275	
Level of SES	n	%	n	%	n	%
<100%	1457	34	1296	30	1590	37
100% – 185%	1955	31	1703	27	2684	42
Unknown	2	67	0	0.0	1	33
Total	3414	32	2999	28	4275	40

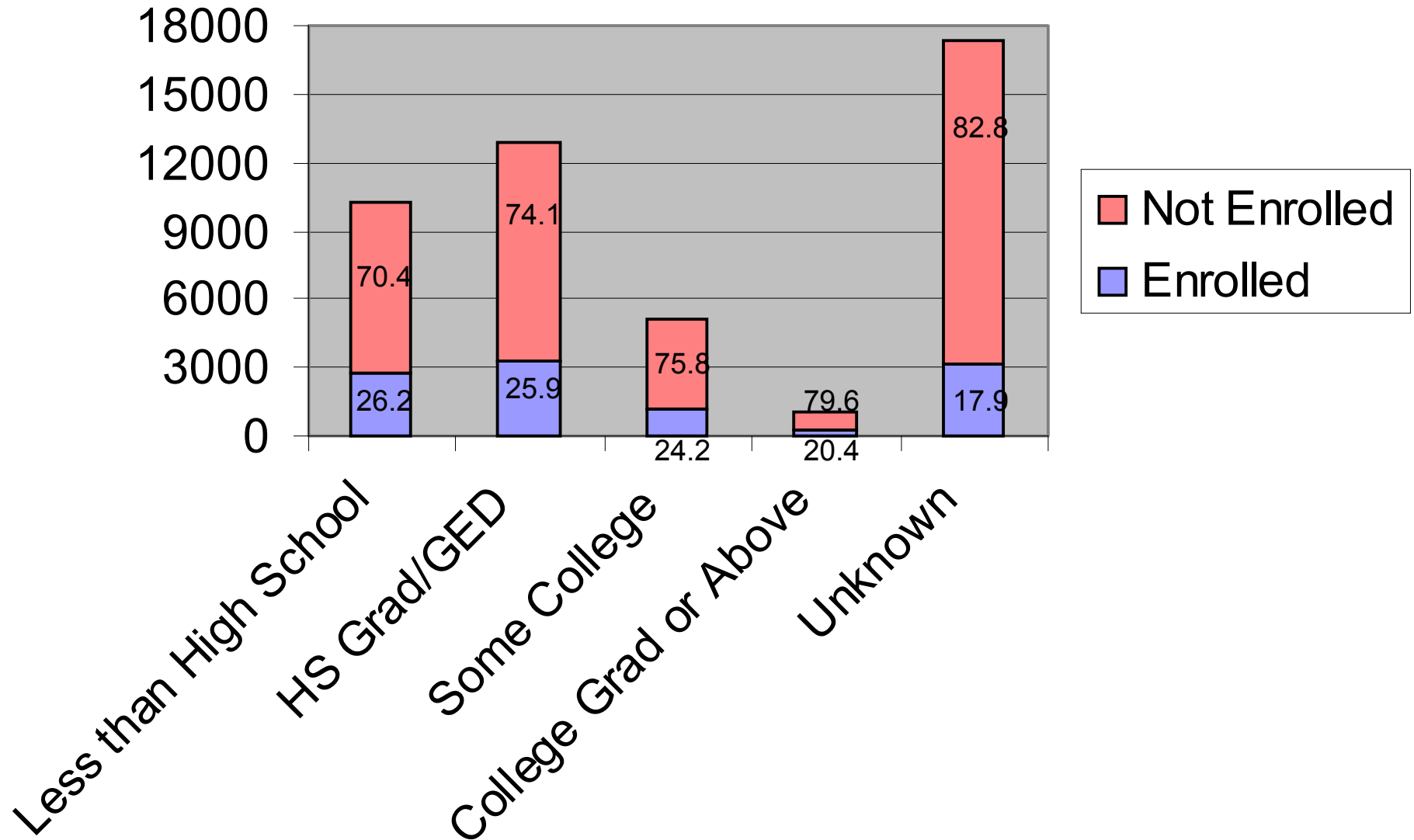
# ISS by SES



# ISS Use by Level of SES

	Encounters + Claims n=7690					
	$\leq 3$ n=2595		4-6 n=1885		>6 n=3210	
Level of SES	n	%	n	%	n	%
<100%	1135	36	799	25	1210	38
100% – 185%	1449	32	1079	24	1987	44
Unknown	11	35	7	23	13	42
Total	2595	34	1885	25	3210	42

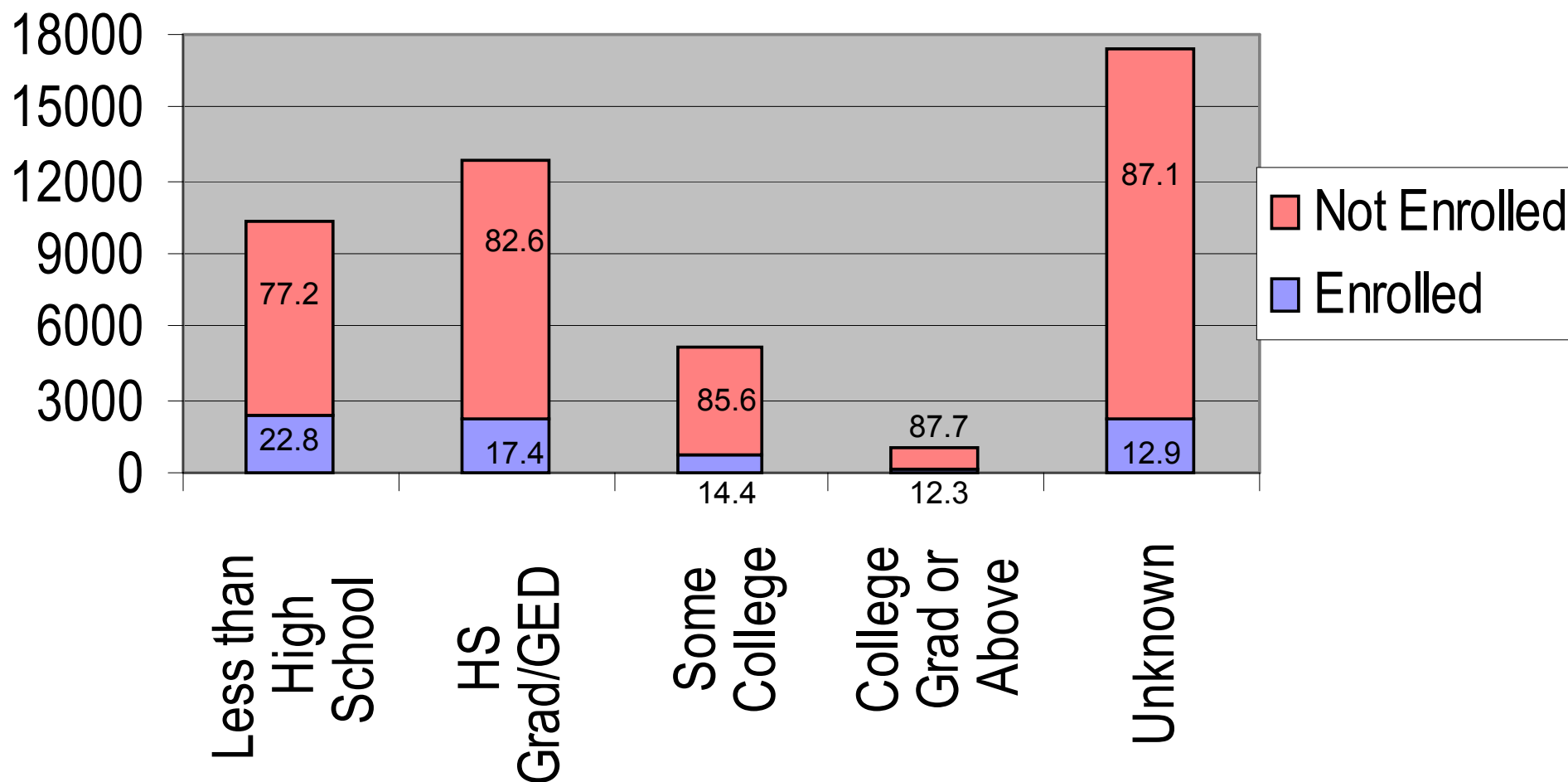
# MSS by Educational Level



# MSS Use by Education Level

	Encounters + Claims (n=10668)					
	$\leq 3$ n=3409		4-6 n=2995		>6 n=4264	
Education Level	n	%	n	%	n	%
Less than High School	868	31	814	29	1104	40
HS Grad/GED	979	29	902	27	1444	43
Some College	405	33	322	26	515	41
College Grad or Above	75	37	40	20	90	44
Unknown	1082	35	917	29	1111	36
Total	3409	32	2995	28	4264	40

# ISS by Educational Level





# ISS Use by Education Level

	Encounters + Claims n=7680					
	$\leq 3$ n=2589		4-6 n=1884		>6 n=3207	
Education Level	n	%	n	%	n	%
Less than High School	783	34	587	25	966	41
HS Grad/GED	705	31	538	24	998	45
Some College	234	32	162	22	342	46
College Grad or Above	38	31	25	20	60	49
Unknown	829	37	572	26	841	38
Total	2589	34	1884	25	3207	42

# Race as a Predictive Risk

- Compared to white women, black women are less likely to:
  - Be enrolled in MSS
  - Have a 12<sup>th</sup> grade or greater level of education
  - Smoke
  - Be diagnosed with depression
  - Drink

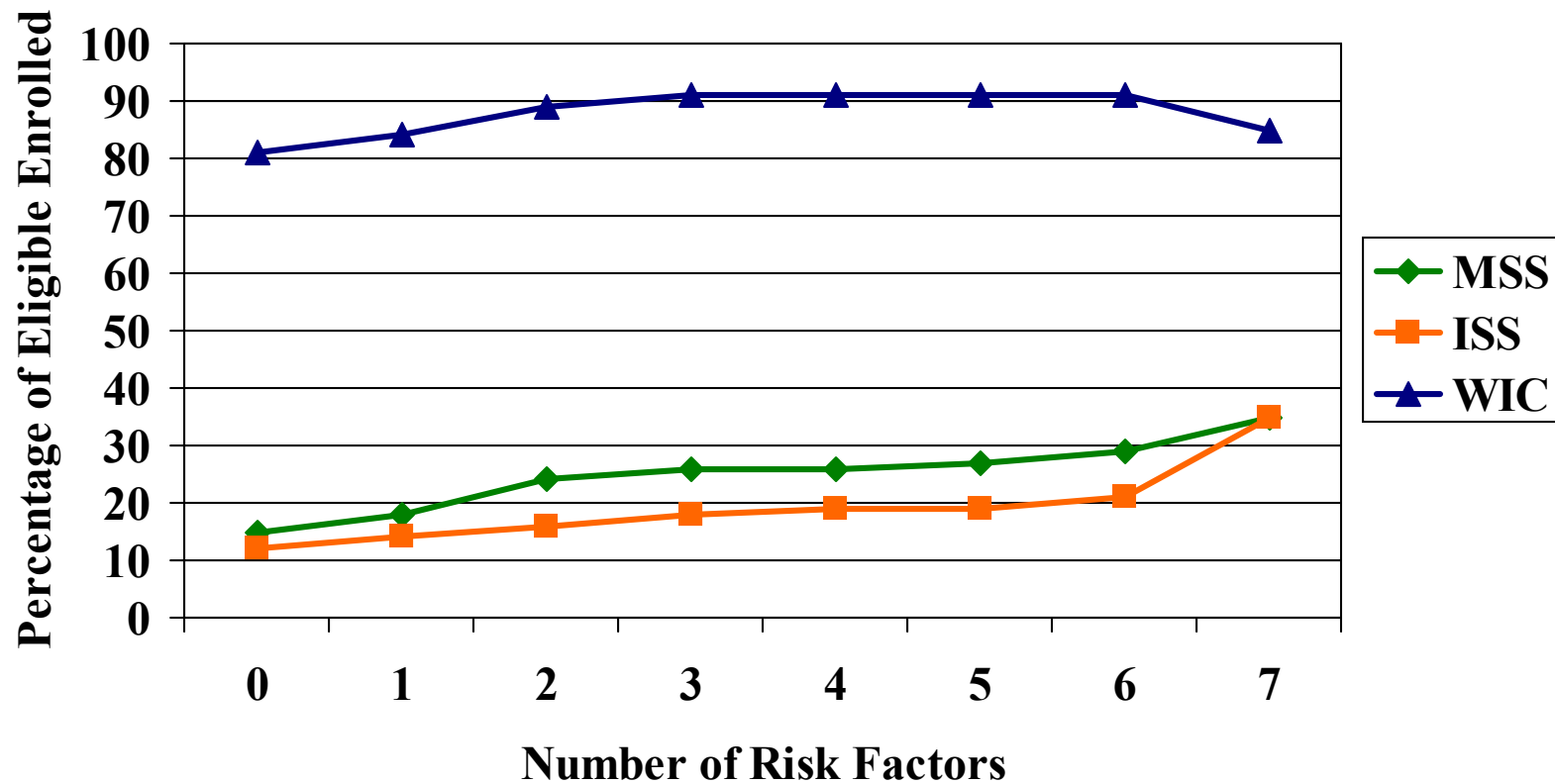
# Race as a Predictive Risk

- Compared to white women, black women are more likely to:
  - Use drugs
  - Be below 100% of poverty
- Compared to white women, there is no difference in inter-gestational interval

# Multiple risks

- Thus far singular risk
- What happens when we look at those with multiple risks

# Combined Risk Factors



# Pregnant Women in WIC

- In 2001 a 62% participation rate was documented
- Recent queries of 2003 data indicates a 82% participation rate

# Pregnant Women in WIC by MSS

Not Enrolled n=36050			Enrolled n=10708	
%	n	Enrolled in WIC	n	%
86.4	31142	Yes	10052	93.9
13.6	4908	No	656	6.1

## Infants in WIC

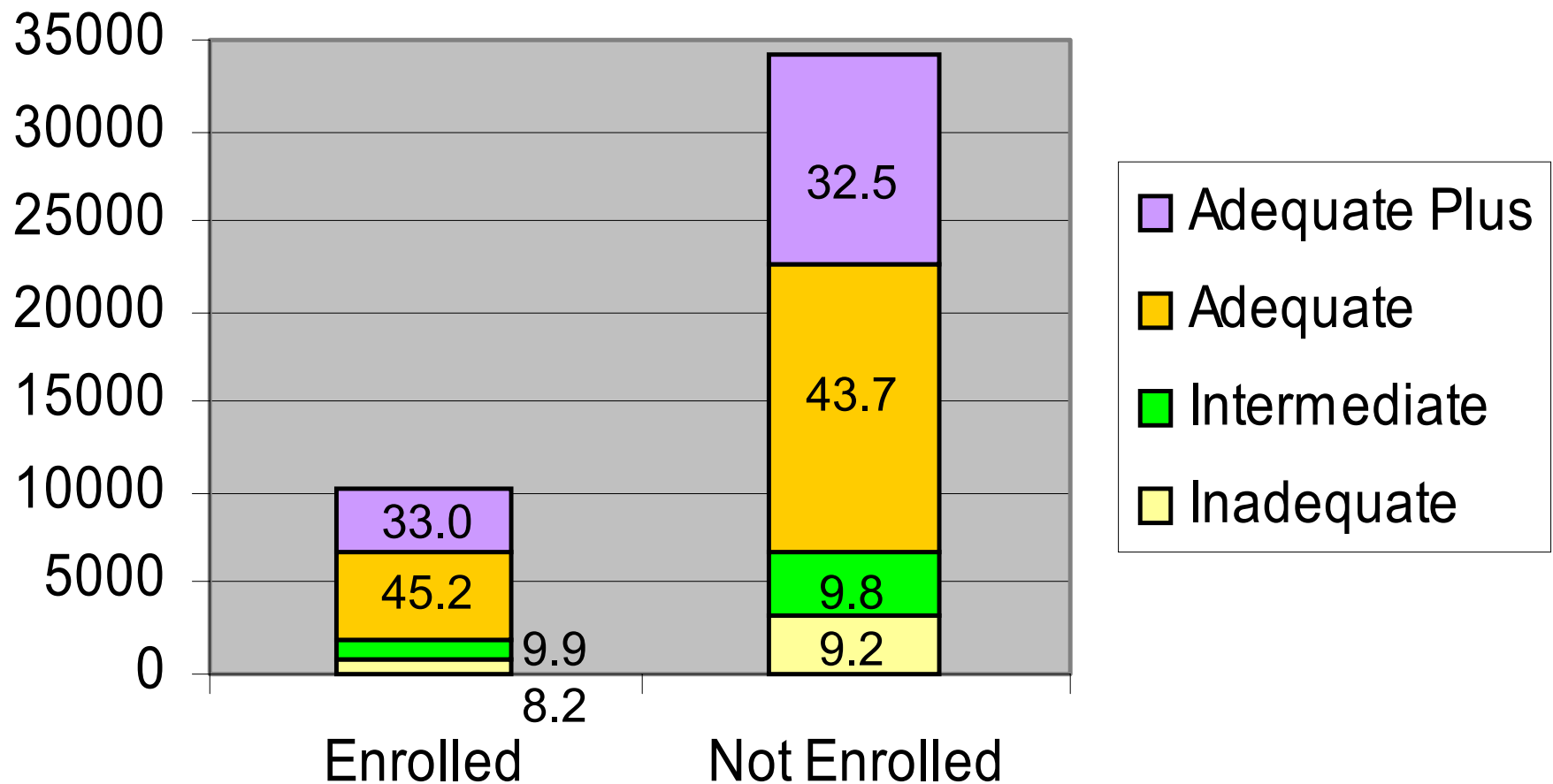
- In 2001 a 78% participation rate was documented
- Recent queries of 2003 data indicates a 85% participation rate



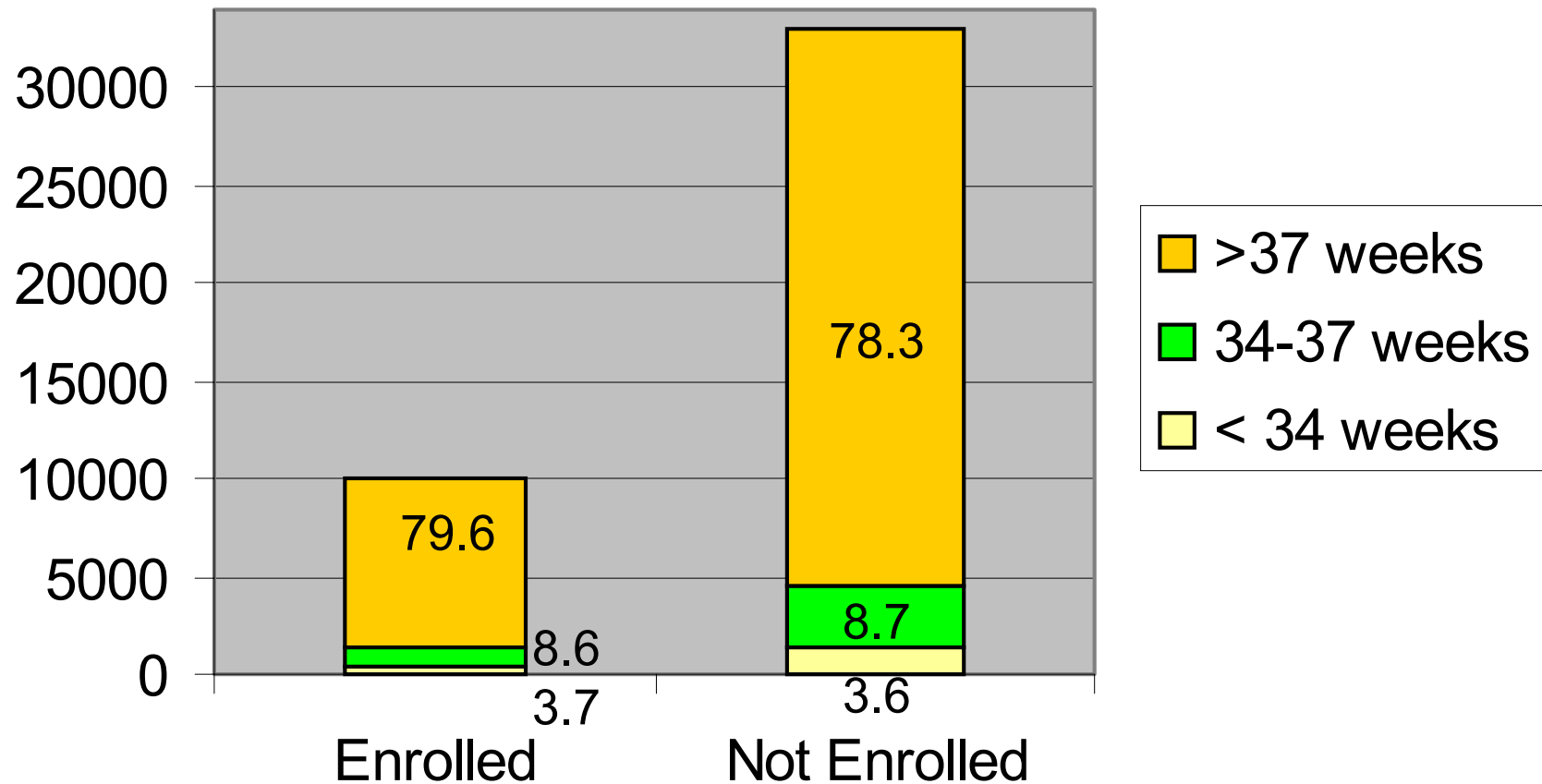
# Infants in WIC by ISS

<b>Not Enrolled n=39612</b>			<b>Enrolled n=7799</b>	
<b>%</b>	<b>n</b>	<b>Enrolled in WIC</b>	<b>n</b>	<b>%</b>
86.6	34318	Yes	7462	95.7
13.4	5294	No	337	4.3

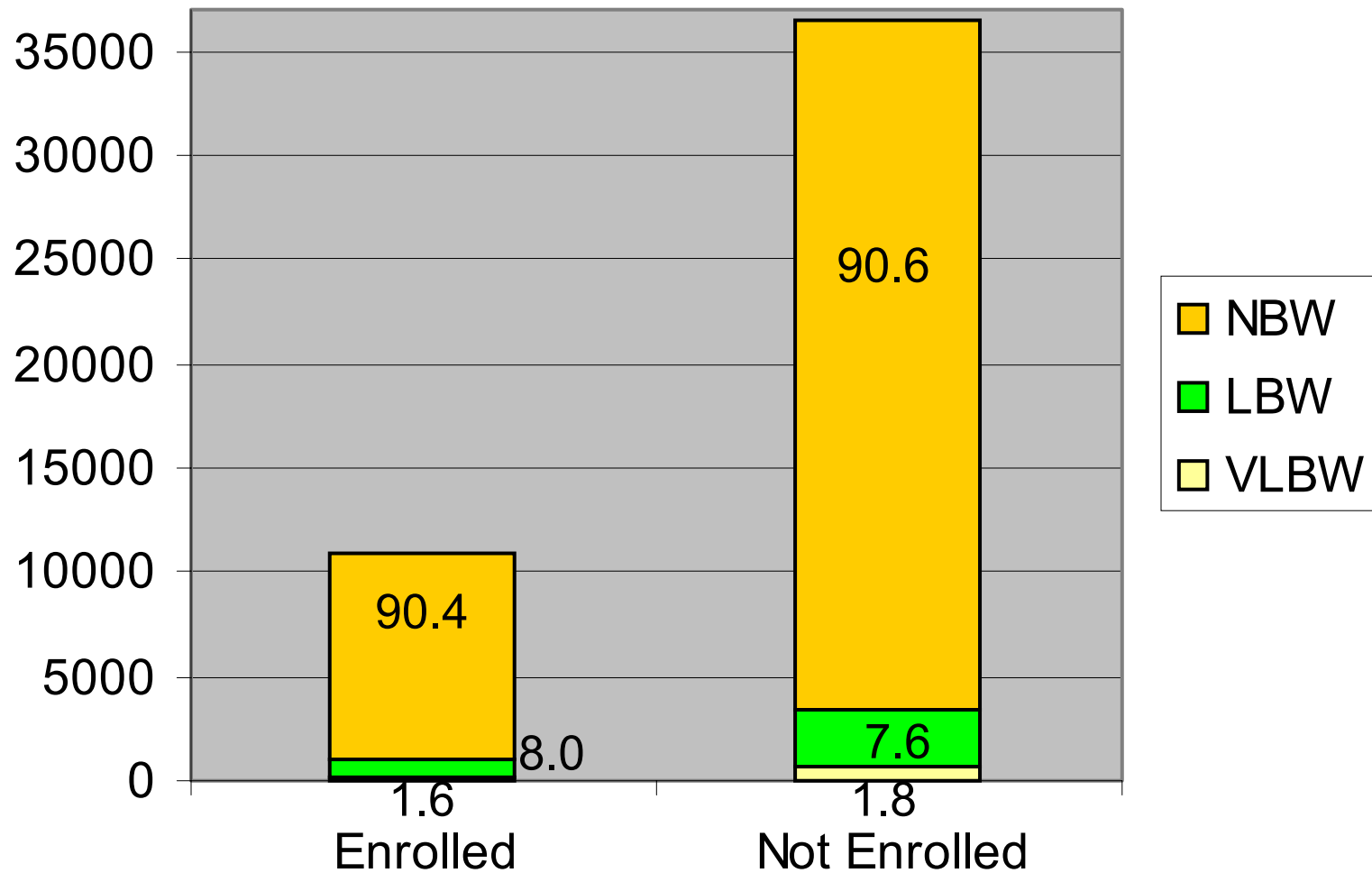
# Adequacy of Prenatal Care by MSS



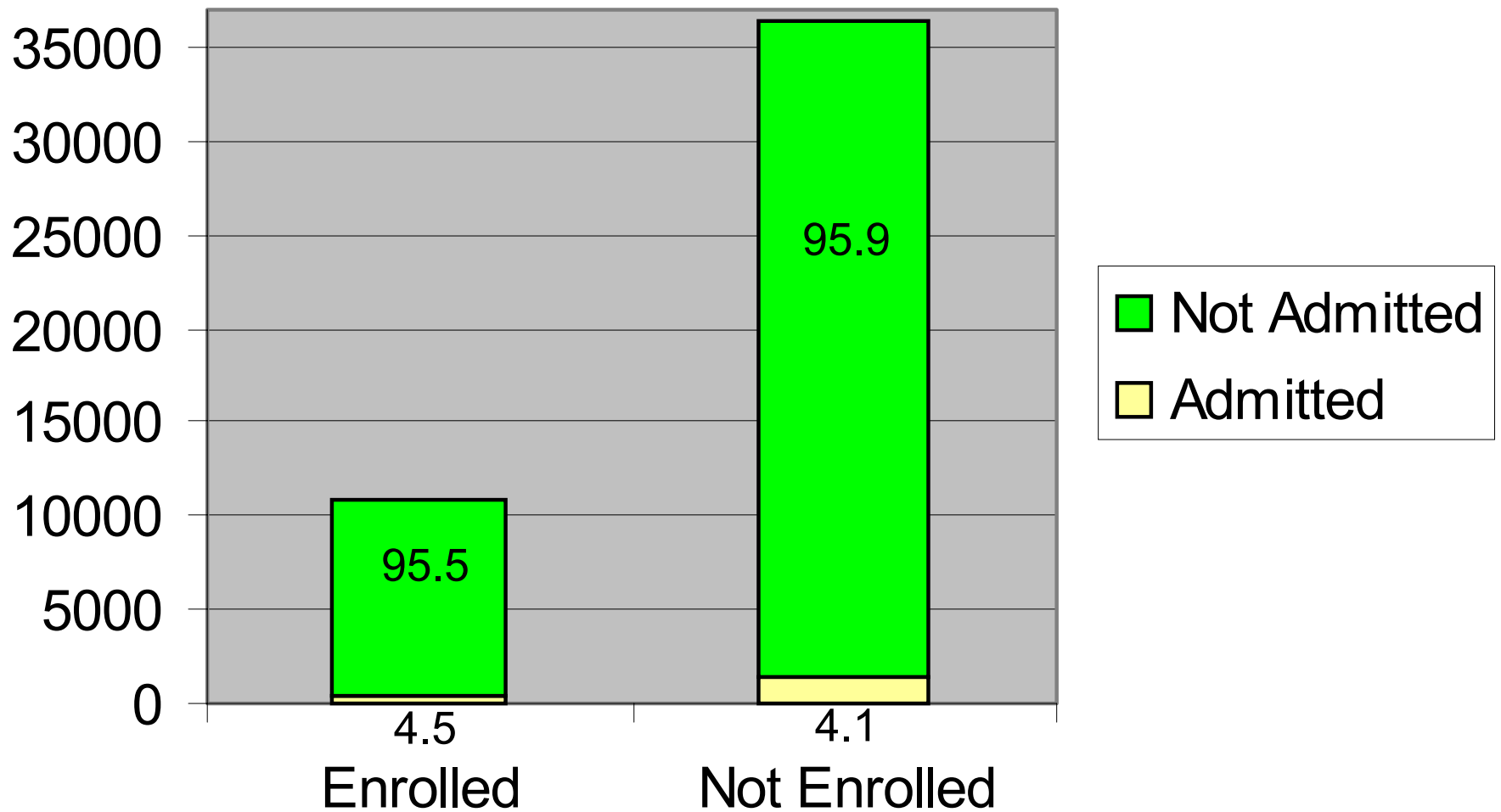
# Gestational Age by MSS



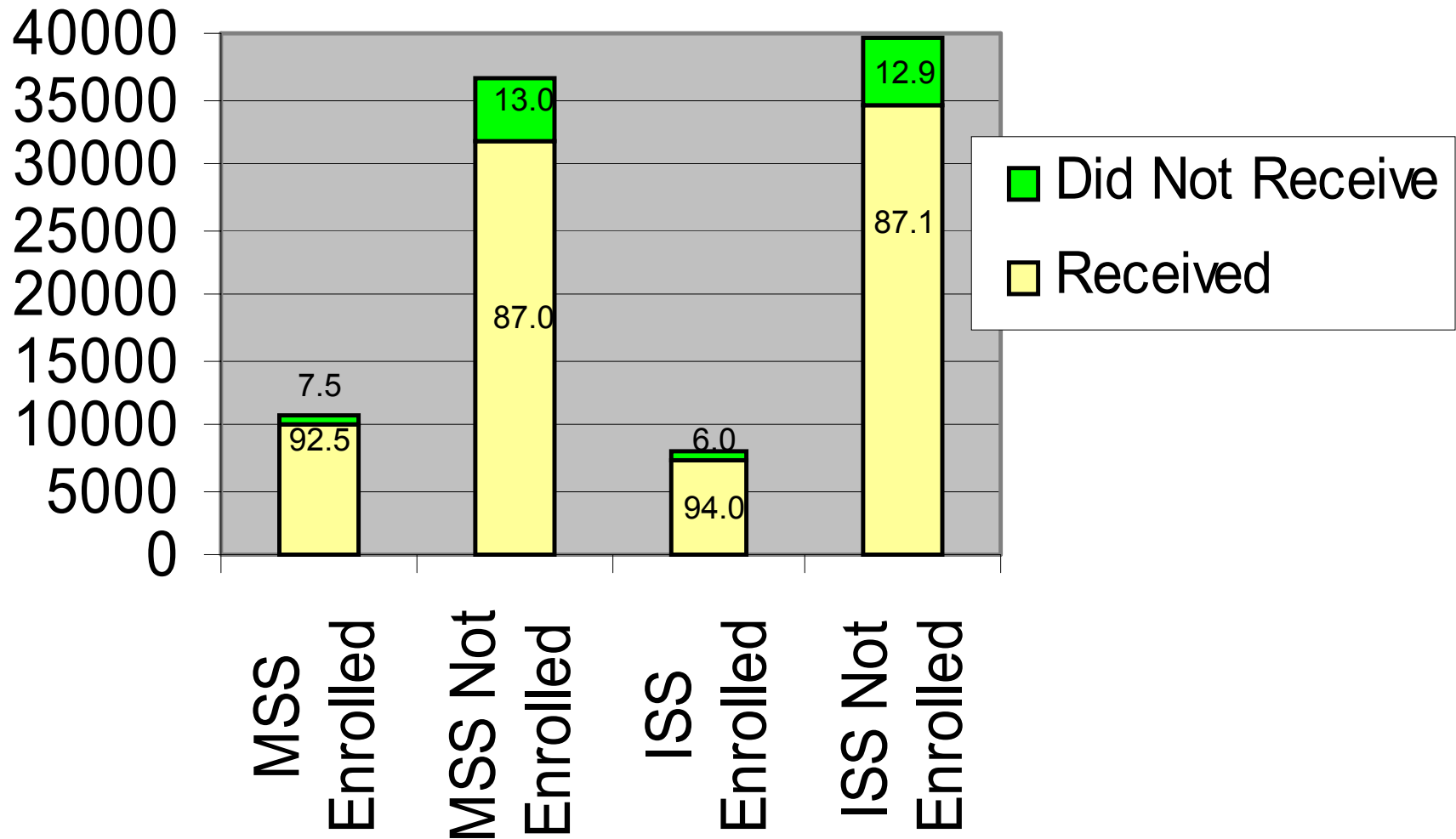
# Birth Weight by MSS



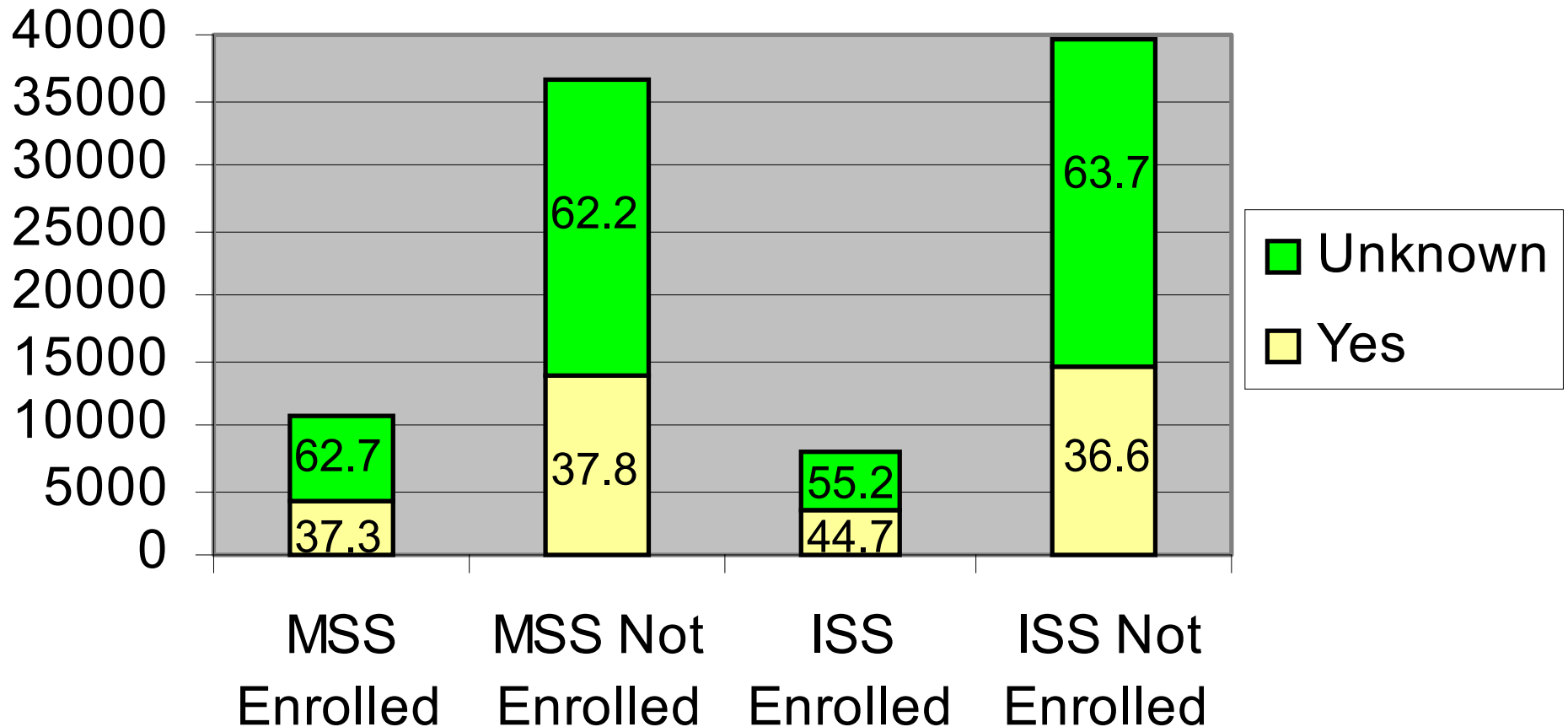
# NICU by MSS



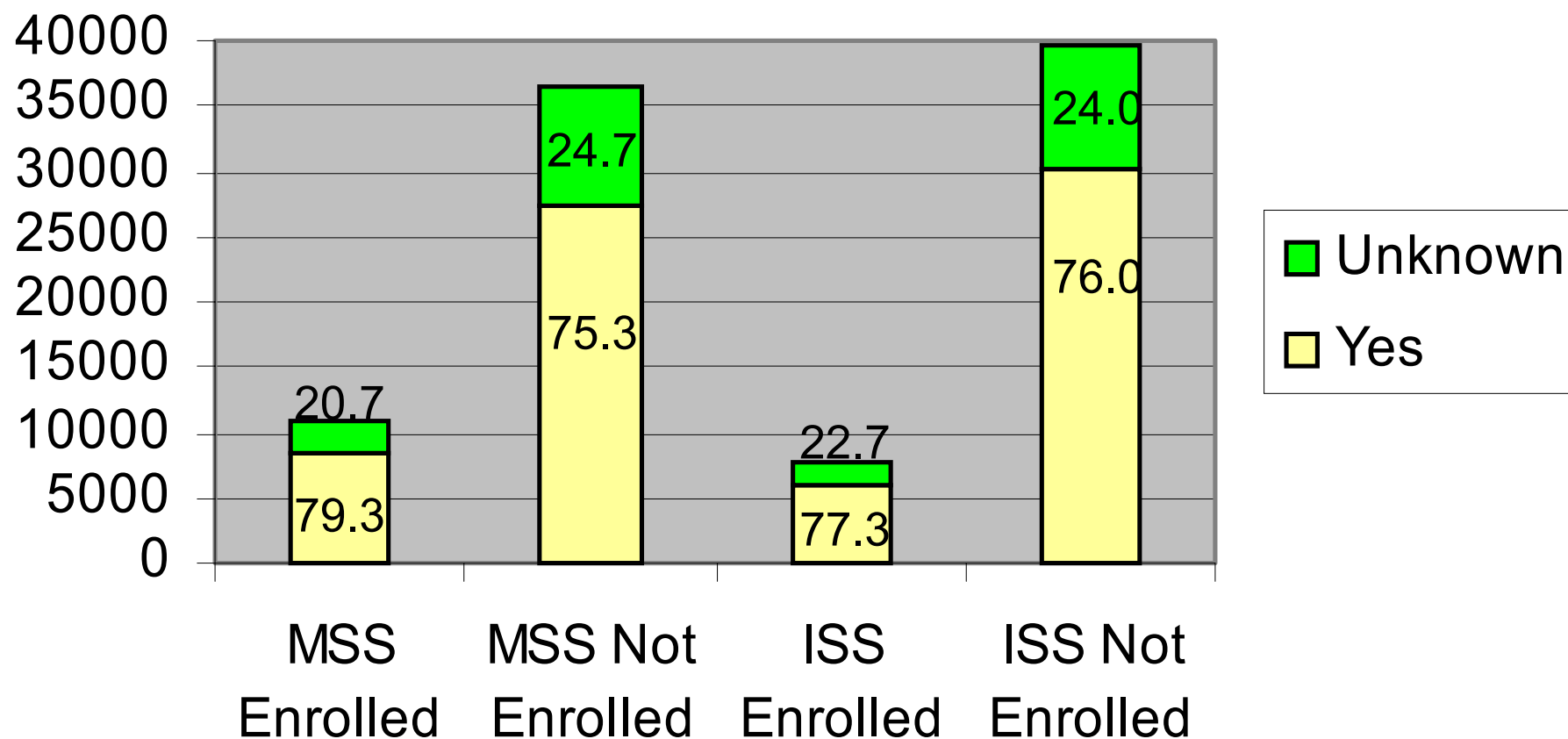
# EPSDT by MSS & ISS



# Lead Screening by MSS & ISS

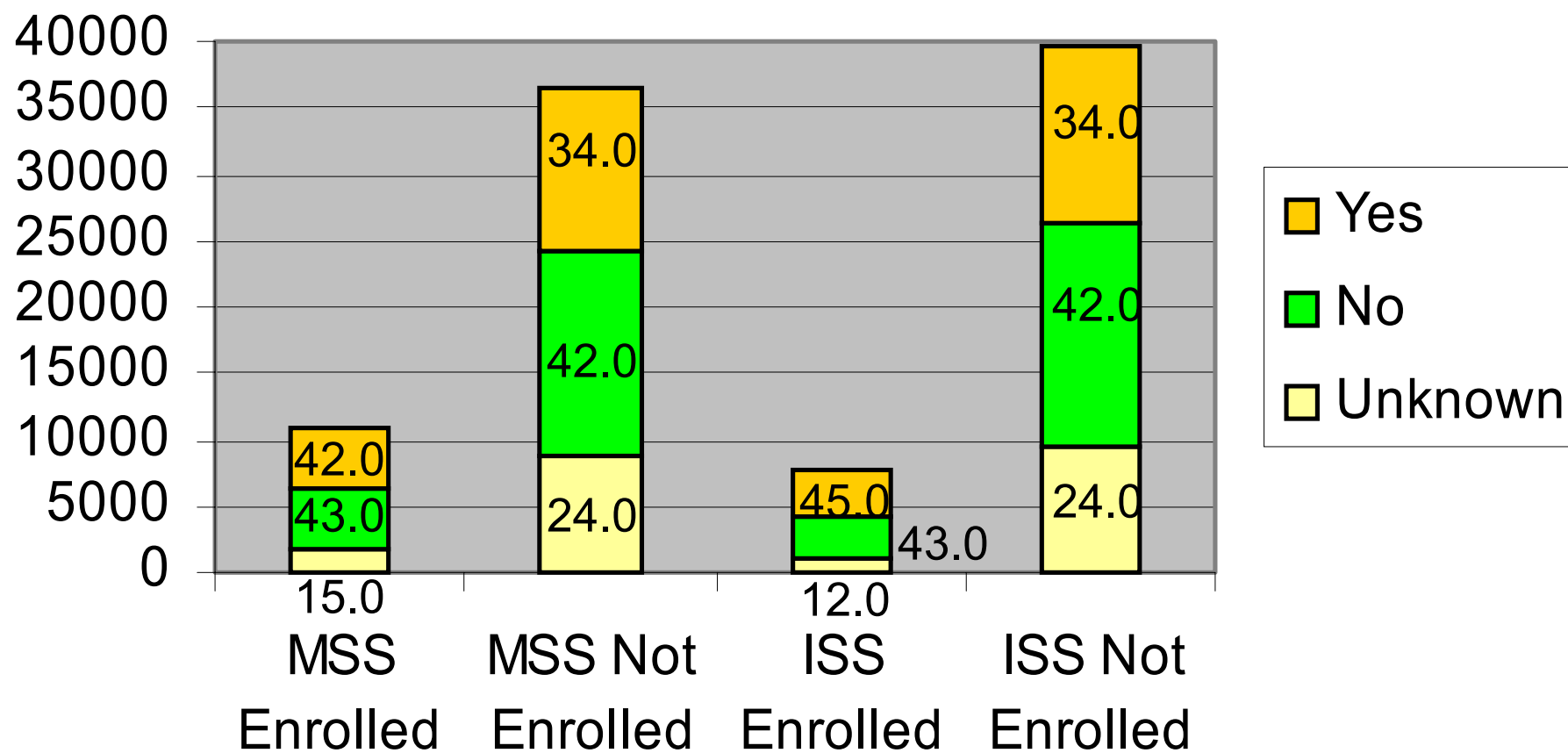


# Immunization by MSS & ISS

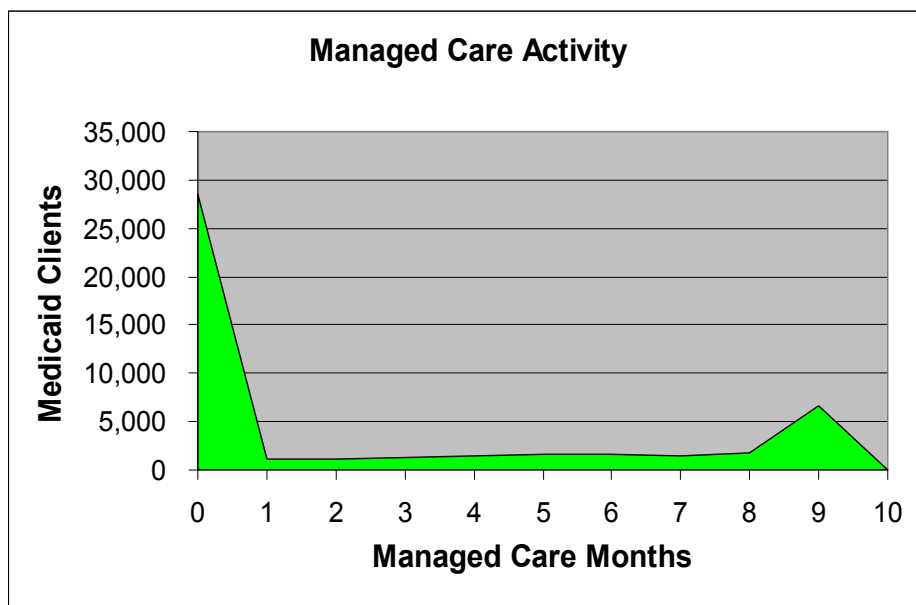
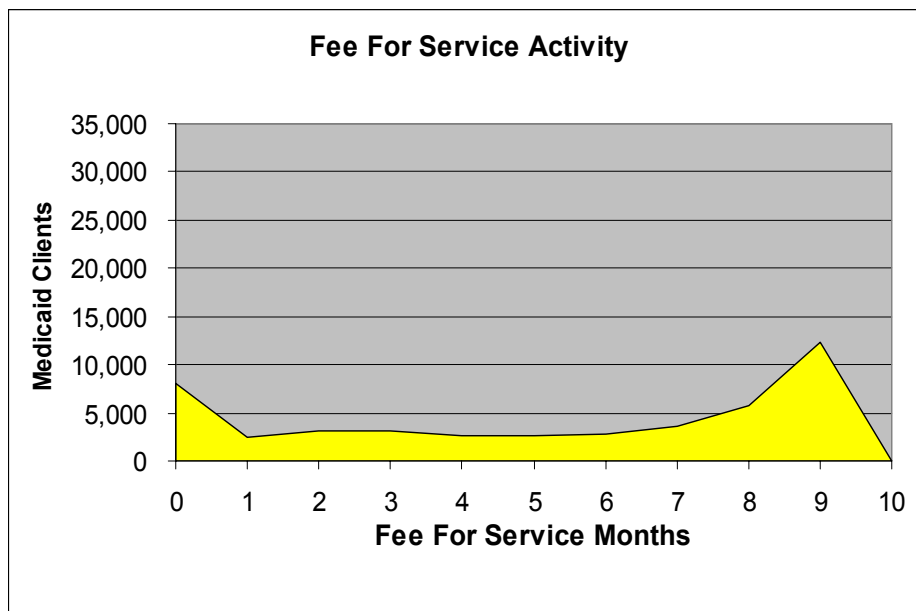




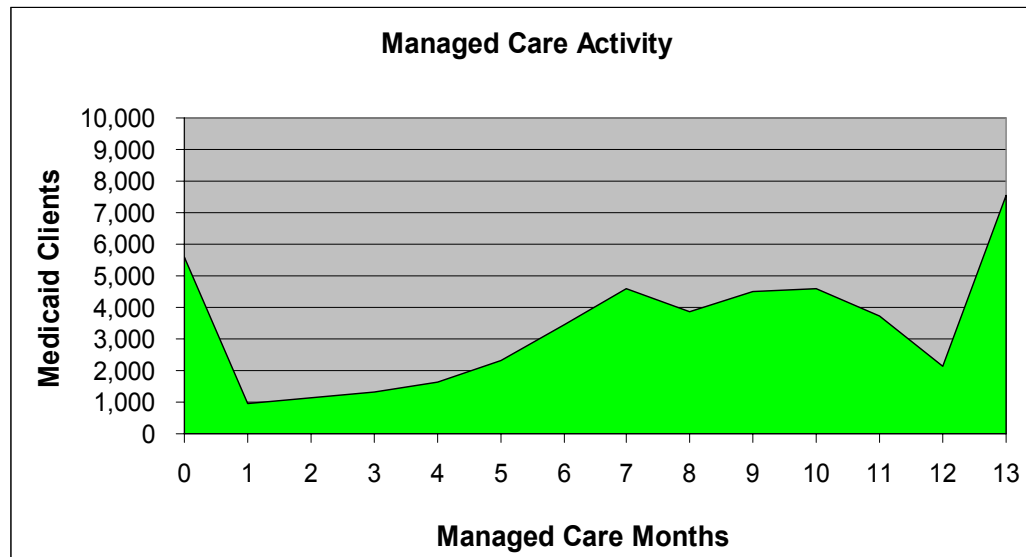
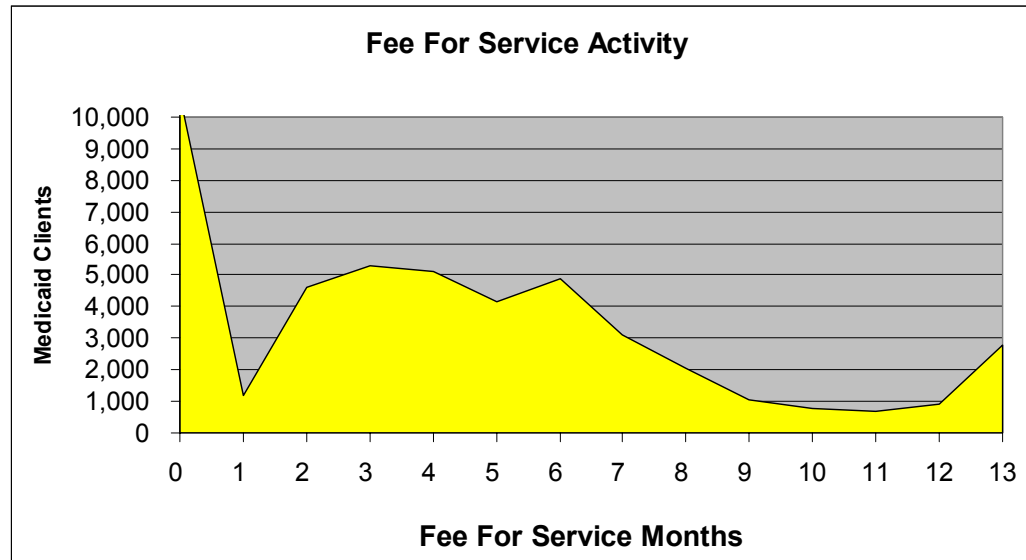
# Breastfeeding by MSS & ISS



# Mother Enrollment



# Infant Enrollment



# Expenditures for all Mothers

	All Women (46,701)	PMPM
Total Payments	\$120,301,046	<b>\$315</b>
Total Months	382,409	
MC Payments	\$18,753,726	<b>\$149</b>
MC Months	125,745	
FFS Payments	\$101,547,319	<b>\$396</b>
FFS Months	256,678	

# Expenditures for all Infants

	All Infants (47,411)	PMPM
Total Payments	\$232,759,766	<b>\$413</b>
Total Months	563,463	
MC Payments	\$125,551,817	<b>\$353</b>
MC Months	355,472	
FFS Payments	\$107,207,949	<b>\$515</b>
FFS Months	207,991	

# Expenditures by ISS

	Not Enrolled (39,612)	PMPM	Enrolled (7,799)	PMPM
Total Payments	\$187,835,580	<b>\$401</b>	\$44,924,187	<b>\$470</b>
Total Months	467,908		95,555	
MC Payments	\$106,422,155	<b>\$359</b>	\$19,129,662	<b>\$326</b>
MC Months	296,793		58,679	
FFS Payments	\$81,413,425	<b>\$476</b>	\$25,794,524	<b>\$699</b>
FFS Months	171,115		36,876	

# Expenditures by MSS

	Not Enrolled (36,014)	PMPM	Enrolled (10,687)	PMPM
Total Payments	\$87,413,397	<b>\$303</b>	\$32,887,049	<b>\$350</b>
Total Months	94,005		288,404	
MC Payments	\$14,014,760	<b>\$147</b>	\$4,738,966	<b>\$156</b>
MC Months	30,411		95,334	
FFS Payments	\$73,399,237	<b>\$380</b>	\$28,148,082	<b>\$443</b>
FFS Months	63,594		193,084	

# Themes from These Data

- Not reaching the highest risk women
  - Go where the women are – e.g., WIC
  - Engage the entire MCH system
  - Targeted risk stratification model
- Activities of MSS/ISS not linked to purported outcomes
  - Targeted intervention for characteristics of women that can be altered (smoking, depression)



# Where do we go from here?

- Multi-stage risk stratification
- Engagement process for harder to reach women
- Targeted risks and intervention
- Developing an outcome monitoring system